Maine State Highway - Route 92
Machias River
Machiasport, Maine

Emergency

Streambank / Shoreline Protection

Detailed Project Report

U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DIVISION
WALTHAM, MASSACHUSETTS

June 1991

DETAILED PROJECT REPORT
MAINE STATE HIGHWAY - ROUTE 92
MACHIAS RIVER / MACHIASPORT, MAINE

EXECUTIVE SUMMARY

This report provides the results of a study authorized under the Special Continuing Authority contained in Section 14 of the 1946 Flood Control Act, as amended. The study investigated a variety of alternatives to prevent further erosion of the State Route 92 highway embankment along the Machias River in Machiasport, Maine. The study was initiated at the request of the town of Machiasport's Office of Selectmen.

The town of Machiasport is located on the southern coastline of Washington County, Maine, about 30 miles northeast of Bar Harbor. The erosion site is located on the right bank of the Machias River, along the shoulder of the State Route 92 highway and directly across from Hooper Point, as shown on the Location Map - Plate 1 in this report.

Route 92 is a two lane State highway which runs parallel to the Machias River. Heavy traffic routinely travels along the highway in the vicinity of the erosion site. Riverbank erosion at the site results primarily from tidal fluctuations and wave action, particularly during high tide events. The erosion has increased the risk that a large portion of the highway could collapse into the river. One of the major scarps of the riverbank is less than two feet from the pavement. The effects of the erosion has contributed to longitudinal cracking and vertical displacement of this pavement. Access to over 300 residences, a commercial fishing harbor, a medium security state prison, two U.S. Post Offices and a number of churches would be adversely affected from the collapse and subsequent closure of the highway to vehicular traffic.

This study describes the plan formulation process which developed and evaluated possible methods of protecting the Route 92 highway. Each alternative was assessed in terms of its effectiveness, efficiency, completeness and acceptability to the public. The plan selected to provide erosion protection to Route 92 involves the construction of a stone slope revetment along the Machias River bank. The estimated first cost of this plan is $176,000 and the annual cost is $18,000. Total annual benefits associated with the prevention of the highway being washed out are estimated at $24,000. The project is, therefore economically justified with a benefit-cost ratio of 1.3 to 1.

It is recommended that, subject to certain conditions of local cooperation as outlined in this report, the proposed project be constructed. The estimated share of the first cost to the local interests is $44,000. The annual operation and maintenance costs, estimated at $1,000, are also a non-Federal responsibility.

DETAILED PROJECT REPORT
MACHIASPORT, MAINE

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DETAILED PROJECT REPORT

MAINE STATE HIGHWAY - ROUTE 92
MACHIAS RIVER
MACHIASPORT, MAINE
JUNE 1991

I AUTHORIZATION

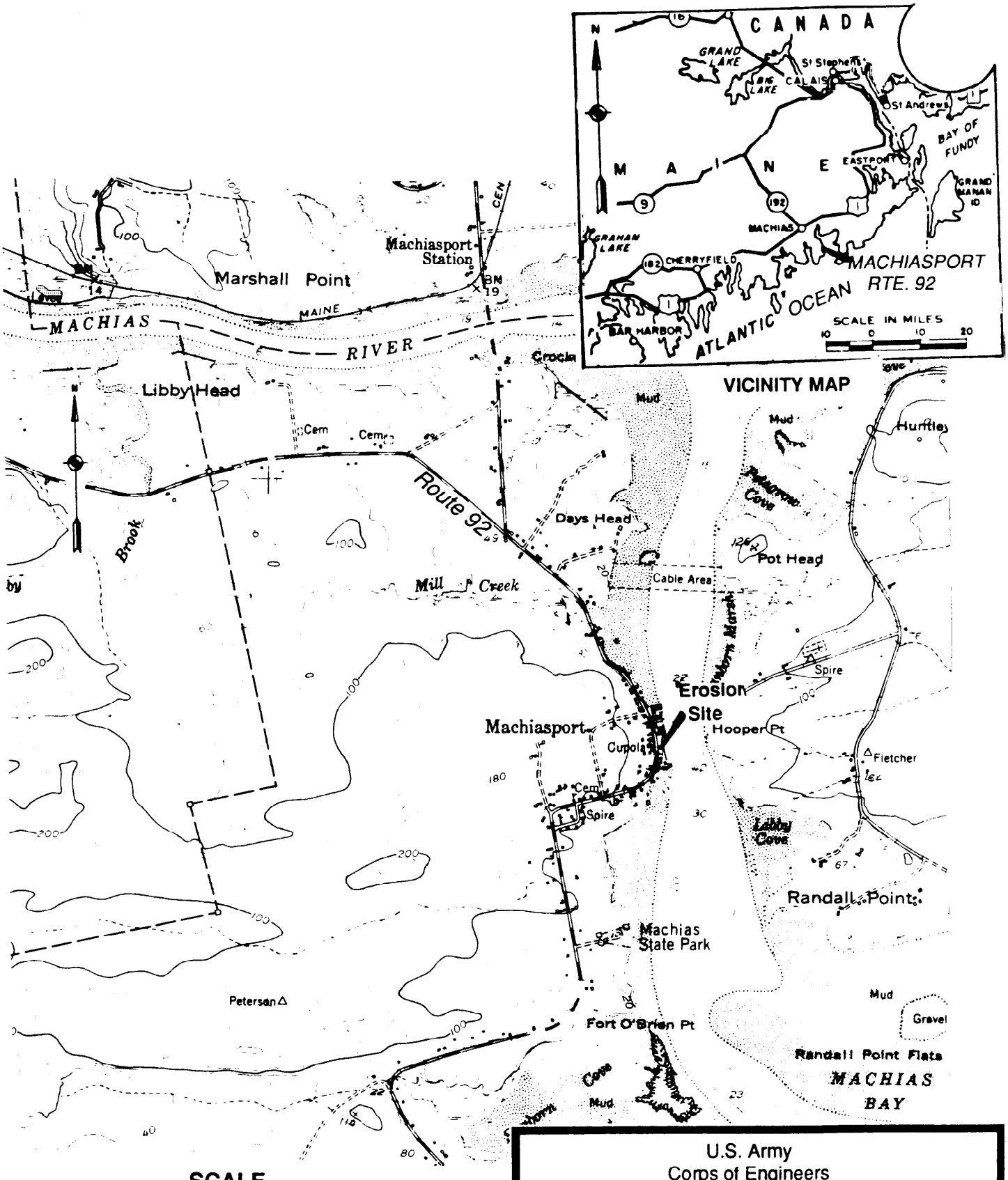
The following investigation has been accomplished under the U.S. Army, Corps of Engineers Special Continuing Authority contained in Section 14 of the 1946 Flood Control Act, as amended. This investigation determined the need and feasibility of protecting the Maine State Highway Route 92, Machiasport Road, by constructing emergency riverbank protection along the Machias River in Machiasport, Maine. Federal assistance in preventing erosion along the highway was requested by the town of Machiasport's Office of Selectmen, in a letter dated 3 May 1990.

Under the provisions of the Section 14 authority, Federal construction funding is available for the protection of highways, bridges, public works and public use facilities from streambank erosion. Such work must be economically justified and advisable in the opinion of the Chief of Engineers.

II DESCRIPTION OF AREA

The town of Machiasport is a coastal community in Washington County, Maine. Machiasport is approximately 30 miles northeast of Bar Harbor. The town is bordered by the towns of East Machias and Machias to the north, Roque Bluffs to the west, Cutler to the east and the Atlantic Ocean to the south.

Machiasport and East Machias were originally part of the town of Machias. In 1784, Machiasport became the forty-second town to be incorporated in the State of Maine. It was the first municipality to be established between the Penobscot and the St. Croix Rivers. Access to the town is provided primarily by Route 92 highway, which runs the length of the Machiasport peninsula. The erosion site is located on the the right bank of the Machias River, approximately 1 mile downstream from the confluence of the East Machias and Machias Rivers, along the shoulder of the highway and directly across from Hooper Point (See Plate 1-Location Map).



SCALE

1 MILE ½ 0

CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
DEPTH CURVES AND SOUNDINGS IN FEET—DATUM IS MEAN LOW WATER
SHORELINE SHOWN REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER
THE AVERAGE RANGE OF TIDE IS APPROXIMATELY 13 FEET

U.S. Army
Corps of Engineers
New England Division

LOCATION MAP

Machias River - Machiasport, Maine
Section 14

PLATE 1

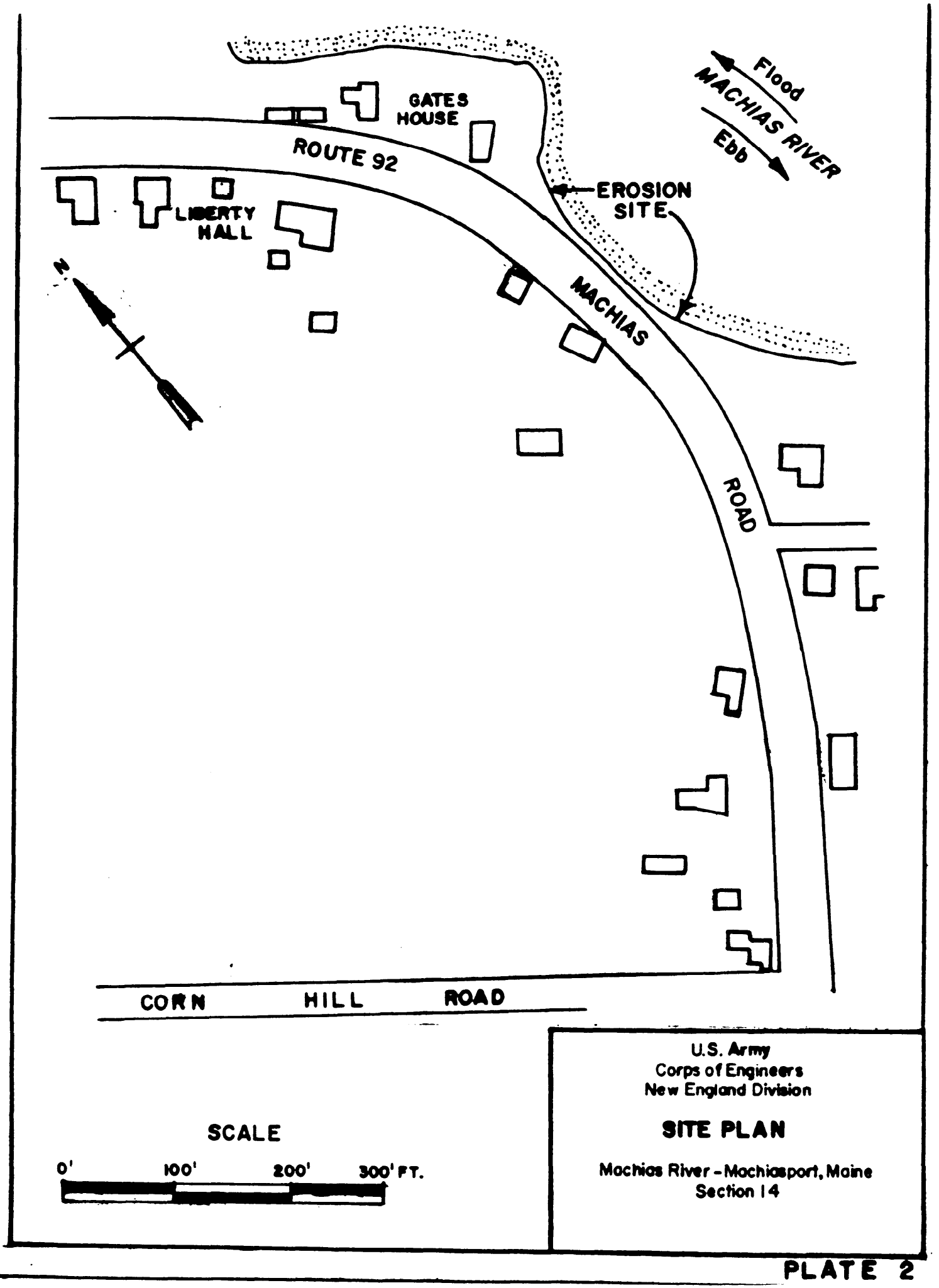

GATES HOUSE
ROUTE 92
LIBERTY HALL
Flood
MACHIAS RIVER
Ebb
EROSION SITE
MACHIAS
ROAD
CORN HILL ROAD
SCALE
0'
100'
200'
300' FT.
U.S. Army
Corps of Engineers
New England Division
SITE PLAN
Machias River - Machiasport, Maine
Section 14

PLATE 2

III PROBLEM DESCRIPTION

The riverbank erosion site is located in Machiasport along the Route 92 highway embankment just south of the Gates House, which is the home of the town's Historical Society. Route 92 is a paved secondary two lane highway, which generally runs north to south parallel to the Machias River. The highway experiences heavy traffic in the vicinity of the erosion site. Both the town of Machiasport and the State of Maine have expressed concern that the continued erosion along the riverbank in this area will force closure of the highway. The town of Machiasport's 1990 Action Plan identified this site as being in imminent danger of being eroded into the sea. If the highway is closed there is no other reliable way to provide vehicular access south to the Machiasport peninsula. In the event of an emergency in the community, this could cause critical delays.

The erosion along the toe of the riverbank begins approximately 25 feet (ft.) south from the Gates House driveway, and extends further south for 400± linear ft.. Erosion of the riverbank toe has severely undermined the Rte. 92 highway shoulder. One of the major eroded scarps in this area is less than 2 ft. away from the pavement surface of the highway. It appears that the erosion has contributed to longitudinal cracking and vertical displacement of the road, as shown on Photo 1.

PHOTO #1

Route 92 Highway - Machiasport, Maine
Vertical Displacement & Cracking

The slope of the riverbank varies between one vertical to one horizontal (1:1) to 1:2. The State of Maine has dumped rock along the toe of a 200 ft. section of riverbank. The stone size ranges two to five ft. in diameter, as shown on Photo #2. The stones to date have not been totally effective against erosion. High river stages overtop the dumped stones and normal river stages wash fine material from behind the stones because an adequate filter was not placed behind the stones. Vegetation (deciduous trees up to 30 ft. in height and brush) on the unprotected portions of the riverbank have been undermined by erosive forces, as shown on Photo #3.

The erosion is primarily influenced by tidal fluctuations as opposed to riverine (both tidal and freshwater) flow. In addition, seasonal ice action contributes to the erosion problem. To a lesser degree, storm water runoff also contributes to the erosion of fine particles from the riverbank. Since the area of concern is protected from significant fetch distances, wave action plays a minor role.

PHOTO #2

Route 92 Highway - Machiasport, Maine
Photo taken at MLW; Toe of Riverbank

PHOTO #3

Route 92 Highway - Machiasport, Maine
Trees & Brush Being Undermined By Erosion

IV HYDROLOGIC & HYDRAULIC ASSESSMENT

The drainage area at the mouth of the Machias River is about 810 square miles, of which 90 percent is forest covered. Although, a Flood Insurance Study has not been prepared for the town of Machiasport, one is available for the town of Machias, which is located approximately 4.5 miles upstream from the erosion site. According to the Machias study, the 1-percent chance (100-year) fresh water flood discharge was estimated to have a flow of 15,000 cubic feet per second (cfs) at the U.S. Route 1 Bridge. The bridge is approximately 5-1/2 miles upstream from the erosion site. The drainage area at the bridge is 474 square miles. Based on watershed ratios, the corresponding 1-percent chance fresh water flood event is expected to be approximately 22,000 cfs at the erosion site. The site is affected by both fresh water flow and tidal action, therefore flows caused by tidal fluctuations must also be considered. Based on the mean spring tide range of 14.4 ft., average tidal flows were estimated to be almost twice as large as the 1-percent chance flood event flow at the site. Therefore, the combined freshwater and tidal flow could be as high as 60,000 cfs at the erosion site. Discharges at the erosion site are due largely to tidal fluctuations with fresh water flow having a smaller, yet significant, contribution. The mean tide range at the site is about 12.6 ft. and mean high water (MHW) is about 6.6 ft. above the National Geodetic Vertical Datum (NGVD). Higher tides can occur during storm surges and spring tide conditions.

Table 1 illustrates the frequency and magnitude of storm induced tidal flooding at the mouth of the Machias River.

TABLE 1

FLOOD EVENT & TIDAL ELEVATION RELATIONSHIPS
Machiasport, Maine; Section 14

Estimated Still Water Flood Event	Tide Elevations (NGVD)
1-year frequency	8.9
10-year frequency	11.0
50-year frequency	11.9
100-year frequency	12.3

V PLAN FORMULATION

This section describes the alternatives that were studied, the plans that were developed and the process that was used to screen each plan. The formulation and analysis of each plan is based on careful review of the existing and future conditions as well as the problems, needs and opportunities of the town of Machiasport. Potential methods for eliminating future erosion of the Route 92 highway embankment, were evaluated, while taking into consideration the strong state and local interests in retaining the natural character of the area.

The Federal Objective

The Federal objective of water and related land resources project planning is to contribute to the National Economic Development (NED) consistent with protecting the nation's environment pursuant to national environmental statutes, applicable Executive Orders and other Federal planning requirements. Economic justification criteria requires that annual benefits due to the emergency riverbank stabilization improvements exceed the annual economic costs of those improvements.

A proposed project should maximize net annual benefits. Corps financial participation is limited to the level of development of the plan which maximizes net benefits. All alternative plans, including the NED plan, were formulated in consideration of four criteria: completeness, effectiveness, efficiency and acceptability. It is the goal of this study to select one plan, called the NED Plan, which is consistent with Federal objectives.

Planning Objectives & Constraints

The planning objectives for this study were based on an assessment of the problems, needs and opportunities in the study area, as determined by Corps investigation statements, regional concerns and goals. The degree to which the alternative plans meet these objectives, while complying with the required criteria, determines which alternative will ultimately be selected.

The objectives of this study are to:

- Determine ways to eliminate riverbank erosion that has threatened the Route 92 highway embankment;
- Strive to avoid adverse impacts and offset unavoidable adverse impacts to existing aquatic resources, and wetlands; strive to achieve a goal of no overall net loss of values and functions;
- Support the objectives of other planning agencies and complement regional long range recreational, environmental protection and commercial fishery development plans.

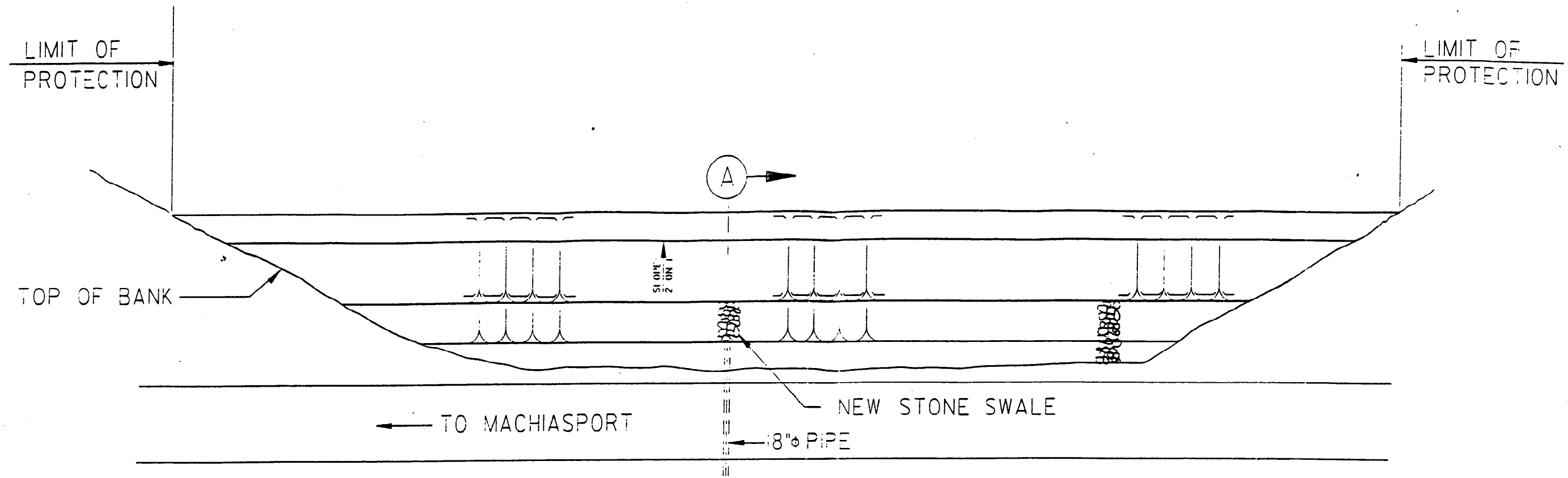
Planning constraints are those parameters that limit the implementation of any proposed plan of riverbank stabilization and serve to eliminate from consideration those possibilities that offer no acceptable degree of satisfaction. These constraints can include natural conditions, economic factors, social and environmental considerations, and legal restrictions.

The following constraints defined the precise nature of the study:

- Current State of Maine policy directs that no activity which would cause a loss in wetland area, functions and values shall be permitted if there is a practicable alternative to the activity which would be less damaging to the environment.
- Alternatives considered should not unduly encroach upon planned riverfront improvements. Evaluation of alternatives will consider local, state and Federal laws affecting the development within the study area.

In order to enhance the physical and social environment of the study area and to avoid creating unacceptable project effects, the following environmental considerations were evaluated:

- To avoid wherever possible the direct loss of intertidal wetlands;
- To avoid adversely affecting the water quality of the riverine environment;
- To reduce or mitigate any significant adverse effects which cannot easily be avoided.
- To design and develop project features so as to provide opportunities which enhance the environment and recreation in the study area.



PLAN

SCALE: 1"= 40'

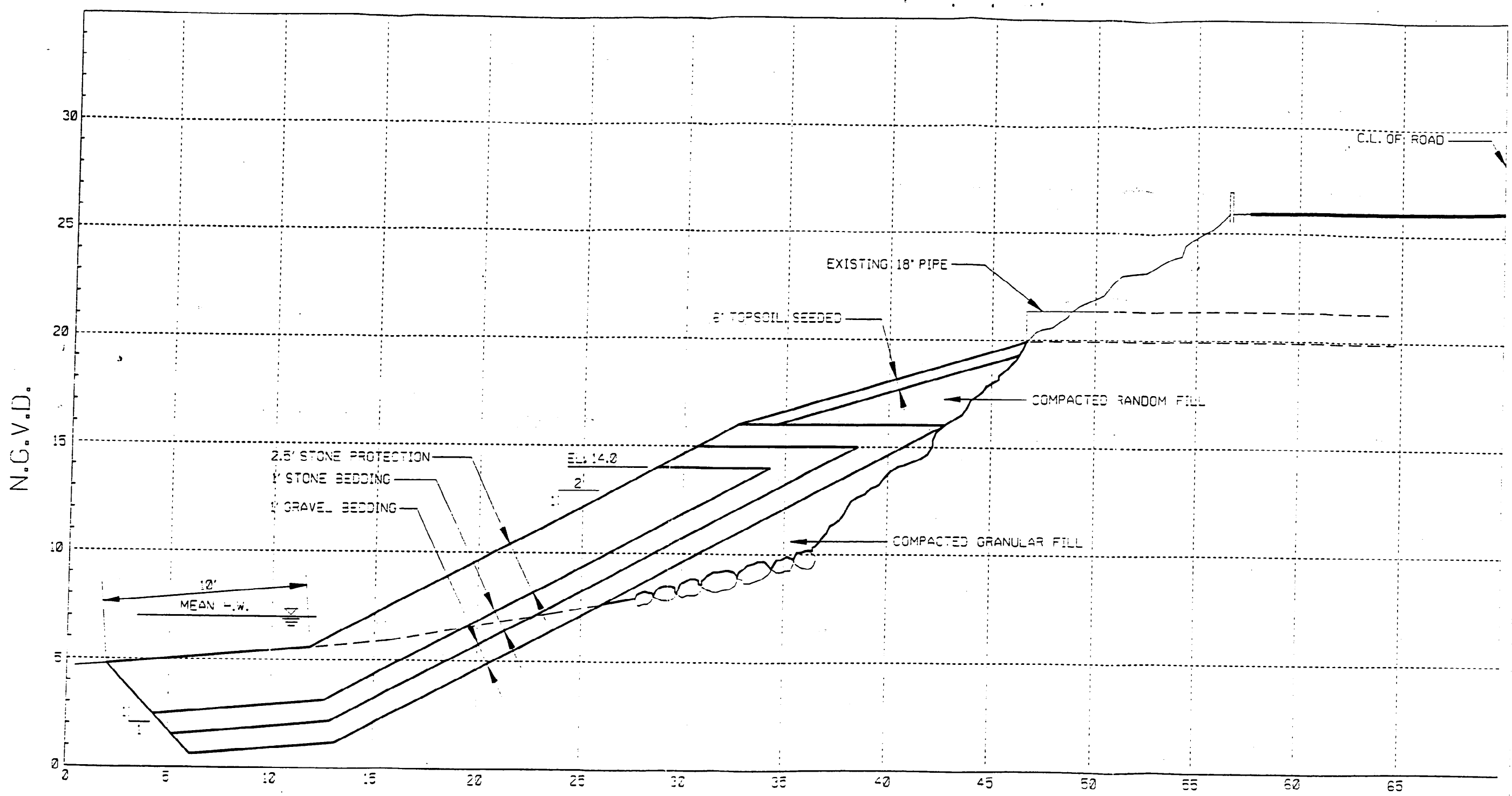
DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION
CORPS OF ENGINEERS
WALTHAM, MASS.

STREAMBANK PROTECTION

MASHIASPORT, MAINE
SECTION 14
PROPOSED PLAN

NOV. 7, 1990

PLATE 3



NOTES:

1. EXISTING SLOPE SHALL BE CLEARED AND GRUBBED PRIOR TO PLACEMENT OF FILL.
2. A CHANNEL SHALL BE INSTALLED FROM THE OUTLET OF THE 18" PIPE TO THE TOP OF THE STONE PROTECTION.

TYPICAL SECTION

SCALE: 1"=5'

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION
CORPS OF ENGINEERS
WALTHAM, MASS.

STREAMBANK PROTECTION

MASCHIASPORT, MAINE
SECTION 14
PROPOSED SECTION

PLATE 4

Analysis of Alternatives

This section describes the range of alternative plans considered. Each alternative was investigated in sufficient detail to determine its economic and engineering feasibility, the effects of implementation and public acceptance. These alternatives are categorized as either structural or nonstructural.

The without project condition, is a sequence of events that can be reasonably assumed to occur in the absence of a Federal project to prevent riverbank erosion at the study site. Without permanent protection along the riverbank, local interests would need to construct temporary measures to protect the highway. The most likely measure would involve the placement of fill on the riverbank and the repair of the highway. This action would only provide emergency protection and would temporarily keep the highway open for vehicular traffic. However, without proper grading and bedding of layers of stone, the riverbank soil would continue to erode due to constant tidal action at the site.

Route 92 is an important access for both commercial and private motor vehicles. The only other vehicular detour routes which avoid the erosion site is the Kennebec and Corn Hill Roads. Kennebec Road is a 15 foot wide unimproved gravel road, which runs from Sanborn Cove west to a paved road in Machias. This detour would require vehicles to travel up to an additional 8 miles. It is assumed that road cannot fully support the level of vehicle conveyance that is currently being provided by Route 92. There would be an additional commensurate amount of travel time due to the unimproved nature of the detour route. Corn Hill Road is a 12 foot wide, 1/2 mile long, unimproved gravel road which loops around the erosion site. This road cannot support the numbers and types of vehicles presently utilizing Route 92, due to its physical dimensions and steep grade.

No Action: Bucks Harbor is located about 3-1/2 miles downstream from the erosion site. The harbor provides moorings for a fishing fleet of over 60 boats. The harbor is one of the major commercial industries the town of Machiasport maintains. If no action is taken to protect the riverbank, erosion will continue, causing the eventual failure of the Route 92 highway embankment. The potential shutdown of the Route 92 highway would adversely effect the harbor as well as other commercial fishery support industries nearby, by creating a financial strain upon the town and its population. In addition, over 300 private residences, one elementary school, a medium security state prison, two U.S. post offices and three churches are located south of the erosion site which would also be adversely affected from the highway closure. In view of the foregoing, a 'No Action' alternative would not be an acceptable solution to the erosion problem that is threatening the highway.

Relocate Rte. 92 : The existing town development and local terrain in the area of the erosion site do not lend themselves economically to the relocation of the Route 92 highway. A large residential structure would have to be relocated to move the highway to the west away from the riverbank erosion. In addition to the structure, a guardrail, telephone and electric power lines, and drainage culverts would also have to be relocated to complete the job. There would also be a disruption of vehicular traffic on the highway until the relocation is completed. The prohibitive expense and associated disruption involved in the relocation of the highway makes this alternative unacceptable. Therefore, relocating the highway is not recommended.

Construct Streambank Protection: During this study several possible methods of protecting the Route 92 highway embankment from erosion were investigated. A timber crib wall, a precast modular retaining wall and a stone revetment were all potential solutions for consideration.

Alternatives were developed and evaluated, as shown on Table 2. The total project first costs for each alternative are as follows:

TABLE 2

EROSION PROTECTION ALTERNATIVES
Machiasport, Maine; Section 14

Alternatives	Total Project 1st Cost
Timber Crib Wall	$427,000
Precast Modular Retaining Wall	$533,000
Stone Slope Revetment	$176,000

Although all of the alternatives investigated could provide protection to the riverbank and highway embankment, stone slope revetment was found to be both the most economical and best erosion control method considered. The total project first cost of the revetment is determined to be $176,000 and is the preferred alternative for this erosion site.

VI THE SELECTED PLAN

The proposed placement of stone slope revetment along the Machias River bank, to protect the Route 92 highway embankment, is the most cost effective, physically viable erosion control method. The stone revetment plan consists of clearing and grubbing of vegetation on the existing slope prior to the placement of 1 ft. thick layer of granular fill and gravel bedding, and 2.5 ft. of stone armor protection should then be placed on top at a 1 : 2 slope. The revetment would be approximately 400 ft. in length and 15 ft. high, beginning at a point 20 ft. south of the Gates House driveway, then extending downstream and terminating at high ground, as shown on Plates 2, 3 and 4.

Side slopes of 1:2 were determined to be the most practical in providing suitable erosion protection for the highway embankment. During a 1 percent chance flood event the proposed protection would not be overtopped, thus fulfilling its intended function of providing riverbank protection, as shown on Plate 3.

VII ESTIMATES OF FIRST COSTS & ANNUAL CHARGES

An estimate of first costs and annual charges for the placement of the stone slope revetment along the Machias River is shown on Table 3. Since the riverbank and all surrounding lands are owned or managed by either the town of Machiasport or the State of Maine, the non-Federal responsibility of providing the necessary lands, easements and rights-of-way for project construction will not effect project costs. Estimated unit prices are based on similar work performed in this area. Cost sharing requirements include a 25 percent contribution of project costs by non-Federal interests. With a total project first cost, for the revetment, estimated at $176,000. The non-Federal share of the first cost is currently estimated at $44,000, subject to change depending on the actual total project costs. A total annual cost of $18,000 is computed using a project life of 25 years an interest rate of 8-3/4 percent with annual operation and maintenance cost estimated at $1,000.

VIII ESTIMATES OF BENEFITS & BENEFIT-COST RATIO

Benefits credited to project construction are based on comparison of the "with" and "without" project condition. Should the riverbank be left as is, erosion will continue and cause the highway to be washed out. Since the highway is an important road connecting many areas of Machiasport, it is anticipated that the town will not allow the road to be completely lost to erosion. The town would close the highway off to vehicular traffic temporarily while emergency repairs are made upon the highway embankment. As evidenced by past measures at the erosion site it is assumed any future repairs will be temporary and of a stop-gap nature, as opposed to a more expensive permanent solution. Due to the temporary nature of these repairs and the history of severe storms along the Maine coastline, it is estimated that the highway embankment will be washed out, on the average, once every three years. Each washout incident will cause the highway to be closed for approximately three days while emergency fill is placed and highway embankment repairs and the pavement restoration are completed. During these periods, all vehicular traffic would have to be rerouted.

If the Route 92 highway is washed out, the only alternative route is the Kennebec Road, about 1-1/2 mi. to the south from the erosion site. Based on traffic counts, provided by the State of Maine Department of Transportation, an estimated 2,400 vehicles use the highway each day. The town would incur increased costs from the detouring of traffic which includes both travel and time costs. These costs are calculated as follows:

It is estimated that approximately 1/3 of the vehicles traveling along Route 92 go to Machias, 1/3 to Days Head, and 1/3 to Machiasport center. Based on map distances, it was determined that the detour will add 1 mi. to the trip distance for vehicles traveling to Machias, the detour will add 8 mi. for vehicles traveling to Days Head, and the detour will add 9.5 mi. for vehicles traveling to the center of Machiasport. The increased travel costs are calculated using the current Corps rate for the reimbursement of private vehicle travel of $0.24 per mi.

The costs of increased travel time without a project to protect the riverbank are calculated using 1/3 of the value of the current average hourly wage of a production worker in manufacturing in the State of Maine. The October 1990 average wage is $10.81 per hour (hr.), 1/3 of which is $3.60 per hr. To determine the increased travel time of the detour, an average speed of 20 mi. per hr. is used, which reflects starting and stopping time and the unimproved nature of most of the detour route. This yields an increased travel time of .05 hr. for vehicles traveling to Machias, .40 hr. for vehicles traveling to Days Head, and .48 hr. for vehicles traveling to Machiasport.

Table 4, below, shows the calculations of increased travel and time costs without a project.

TABLE 4

CALCULATIONS FOR INCREASED TRAVEL & TIME COSTS
Machiasport, Maine; Section 14

TRAVEL COSTS

Destination	No. of Cars per Day		No. of Days per detour		No. of mi. Detoured		Cost per mi.		Cost
Machias	800	X	3	X	1	X	$0.24	=	$576
Days Head	800	X	3	X	8	X	$0.24	=	4,608
Machiasport Ctr.	800	X	3	X	9.5	X	$0.24	=	+5,472
									$10,656

TIME COSTS

Destination	No. of Cars per Day		No. of Days per detour		No. of hrs. Detoured		Cost perhr.		Cost
Machias	800	X	3	X	0.05	X	$3.60	=	$432
Days Head	800	X	3	X	0.40	X	$3.60	=	3,456
Machiasport Ctr.	800	X	3	X	0.48	X	$3.60	=	+4,148
									$8,036

The total cost of the expected traffic detours, including travel distance and time costs, is $18,692 per wash out incident.

After each washout event, the cost to the town for police to man the area during the emergency is estimated at $50 per hr. Assuming 3 days per washout event and 8 hours of work per day, total police costs per incident are estimated at $1,200 (8 hrs. per day X 3 days X $50 per hr.). In addition to the police costs, the town would place detour and warning signs at the erosion site, and perform emergency repairs to the highway. These costs are estimated at $43,700 per washout event.

Repair work to the riverbank and the highway represents emergency type construction which would only be a temporary fix. The emergency level repair as accomplished by the local efforts on the riverbank is expected to last 3 years before the erosive action of the Machias River undermines the temporary protection along the riverbank, thus requiring additional repairs. Under these circumstances and during the 25 year economic life of the recommended plan, erosion repair would have to be accomplished eight times for the without project condition.

The total cost incurred by Route 92 highway users and by the town after each washout event is $56,310. Table 5 illustrates the summary of the costs incurred during each washout event.

TABLE 5

SUMMARY OF PREVENTABLE COSTS
Machiasport, Maine; Section 14

Estimated Temporary Item	Repair Costs
Travel Distance Costs	$10,660
Increased Travel Time	8,040
Highway Emergency Repairs	43,700
Police/Emergency Crew Cost	+ 1,200
Total Preventable Damages	**$63,600**

The present worth (PW) calculations for these costs are shown below in Table 6.

TABLE 6

PRESENT WORTH
OF ROAD WASHOUT COSTS
Machiasport, Maine; Section 14

YEAR	AMOUNT		PW FACTOR		PW
1	$63,600	X	0.91954	=	$58,483
4	$63,600	X	0.71496	=	$45,471
7	$63,600	X	0.55589	=	$35,355
10	$63,600	X	0.43222	=	$27,489
13	$63,600	X	0.33606	=	$21,373
16	$63,600	X	0.26129	=	$16,618
19	$63,600	X	0.20316	=	$12,921
22	$63,600	X	0.15796	=	$10,046
25	$63,600	X	0.12280	=	$7,810
	TOTAL				**$236,000**

Benefits to the project equal the road washout costs that would be prevented with the project. The total present worth of the road washout cost, which would occur without the project, is $236,000, as calculated in the without project conditions. With the project, these costs would be prevented. Thus, the road washout costs prevented equal the total project benefits. Amortizing these benefits over the 25 year project life yields an annual benefit to the project of $24,000 per yr. ($236,000 X .09975 Capital Recovery Factor; CRF).

Table 7 compares annual costs for alternative streambank protection projects. The plan that maximizes net National Economic Development benefits (the NED plan), and compliments the town of Machiasport's development plans is Plan 4.

TABLE 7

ANNUAL COSTS & ANNUAL BENEFITS
COMPARISONS BETWEEN SELECTED PLAN & ALTERNATIVES

Machiasport, Maine; Section 14

Plan	Annual Costs	Annual Benefits	Benefit-Cost Ratio	Net Benefits
Timber Crib Wall	$43,000	$24,000	0.6	none
Double Wall	$53,000	$24,000	0.4	none
Stone Slope Revetment	$ 18,000	$24,000	1.3	$6,000

The selected plan will provide over a 100-year level of tidal induced flood protection to the exposed riverbank. The annual cost of the stone slope protection plan is $18,000 compared with the annual benefits of $24,000. The ratio of benefits-to-costs is 1.3 to 1 with net benefits equal to $6,000. The stone slope protection plan would eliminate future disruption along the Route 92 highway. The town of Machiasport and the State of Maine would be responsible for maintenance of the project, estimated to cost $1,000 annually.

IX ENVIRONMENTAL CONSIDERATIONS

An extensive public involvement process has been carried out throughout the study. Through correspondence, informal and formal discussions, and field trips. Involvement of non-Corps interests has had a profound effect on the directions taken by the study as it progressed toward development of a technical feasible, economically and environmentally acceptable, implementable plan.

No significant environmental long term adverse effects are expected to occur during or after construction of the erosion protection project. Construction activities will probably cause increased turbidity in the Machias River for a short period, but should have no permanent effect on water quality. The following comments of Federal and State Agencies have been made prior to the completion of this report:

- The U.S. Environmental Protection Agency believes, that the proposed project will not have long term significant adverse damage to the riverine environment, provided that the project's construction takes place in the early spring or fall.

- The Maine Historic Preservation Commission has stated that the revetment plan is in accordance with Section 106 of the National Historic Preservation Act, and has found that the selected plan will have no adverse effect upon the immediate area.

Completed coordination with relevant state and Federal agencies indicate no significant effect on fish and wildlife habitat is expected provided that the project's construction takes place in the early spring or early fall. The Draft Main Report, and the Environmental Assessment with a Finding of No Significant Impact (FONSI) which accompany it, all reflect the issues that have been raised by local,State and Federal interests. For a more detailed discussion of the environmental effects of the recommended project, see the attached 'Environmental Assessment'.

The findings of this report are being circulated to public agencies and to the public for review and comment. The Division Engineer issued the Public Notice announcing his draft study findings and recommendations. Once the Public Notice review and comment period is completed the Division Engineer will send the final report document and supporting information, including agency and public comments and responses, to the Corps' Washington Office of the Chief of Engineers, for approval to initiate plans and specifications. Plans, specifications, and a detailed estimate will be completed prior to the advertising for bids and awarding of the construction project.

X REQUIREMENTS OF LOCAL COOPERATION

The State of Maine Department of Transportation (MDOT) is the non-Federal sponsor for the proposed project. The DPR's recommendations have been discussed with officials from the MDOT. The Commissioner of MDOT, by virtue of a letter dated 6 June 1991 (see Enclosure 1), fully supports the proposed project, and has indicated his department's willingness and ability to provide items of local cooperation including cost sharing.

A draft Local Cooperation Agreement (LCA) has been reviewed by the local sponsor and is understood. Satisfactory written assurances of local cooperation will be obtained by the Federal Government prior to requesting funds for construction of an approved project. Such assurances do not commit the Federal Government to construction of the project.

XI CONCLUSIONS

It is concluded that construction of stone slope revetment will provide erosion protection along the Machias River bank, thus preventing the undermining and failure of the Route 92 highway embankment. The plan selected provides a technically sound solution to the problem and is acceptable to local interests.

XII RECOMMENDATIONS

I recommend that this report be approved as a basis for the preparation of plans and specifications and construction of the selected plan described herein under authority contained in Section 14 of the 1946 Flood Control Act, as amended. I further request that the New England Division Engineer be designated the approval authority for the construction plans and specifications.

Recommendations contained herein reflect the information available at this time and current Departmental policies governing formulation of individual projects. They do not reflect program and budgeting priorities inherent in the formulation of a national Civil Works construction program nor the perspective of higher review levels within the Executive Branch. Consequently, the recommendations may be modified before they are transmitted for authorization and/or implementation funding. However, prior to transmittal, the sponsor, the state, interested Federal agencies, and other parties will be advised of any modifications and will be afforded an opportunity to comment further.

Date 19 Jun 91

PHILIP R. HARRIS
Colonel, Corps of Engineers
Division Engineer

XIII ACKNOWLEDGEMENTS

The New England Division, U.S. Army Corps of Engineers prepared this report under the direction of Colonel Philip R. Harris, Division Engineer. It was prepared by Mr. Robert S. Russo, Project Manager, under the supervision of Mr. F. William Swaine, Chief Project Development Branch, and Mr. Joseph L. Ignazio, Director of Planning.

Members of the study team include:

Ms. Kate Atwood - Historic Properties
Ms. Susan Douglas - Public Affairs
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Ms. Deborah Greason - Hydraulic/Hydrologic Analysis
Mr. Christopher Lindsay - Cost Estimates
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Mr. Paul Schimelfenyg - Geotechnical Input

This report was prepared for publication by Ms. Judy Antonellis and Mr. Robert Bentham.

Special thanks are extended to Mr. William Holms, Selectman of Machiasport and Mr. Douglas Cambell Planning Board Member of Machiasport whose cooperation and assistance were instrumental in resolving complex issues.

ENVIRONMENTAL ASSESSMENT

AND

FINDING OF NO SIGNIFICANT IMPACT

SECTION 14 STREAMBANK PROTECTION PROJECT

MAINE STATE HIGHWAY - ROUTE 92

MACHIAS RIVER

MACHIASPORT, MAINE

(Draft)

Prepared by:

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(Biologist)

and

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May 1991

New England Division
U.S. Army Corps of Engineers
Waltham, Massachusetts

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APPENDIX

LETTERS RECEIVED

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

404 B(1) EVALUATION

I. INTRODUCTION

A. Purpose and Need

This report assesses the potential environmental effects of a proposed emergency shoreline protection project along a section of the Machias River in Machiasport, Maine. Streambank erosion at the site is threatening a public highway, and local authorities have enlisted the Corps to find an effective solution to the problem. Several alternatives were considered, and it was determined that construction of rock revetment protection at the site is warranted (see accompanying Detailed Project Report, DPR).

B. Project Authority

This study was conducted under continuing authority contained in Section 14 of the 1946 Flood Control Act (as amended). The Section 14 Program authorizes the Corps of Engineers to plan and construct emergency streambank protection projects in order to protect public facilities.

C. Site Location and Problem Description

The project is located in the town of Machiasport in northeastern Maine (see Location Map in DPR). The town is situated on a broad peninsula bounded to the east by the Machias River and Machias Bay, and to the west by Little Kennebec Bay. Bank erosion along a 400 foot reach of the Machias River is threatening a section of Route 92, a paved, two-lane public highway. The erosion has undermined the highway shoulder, and appears to have caused longitudinal cracking and slumping of the road (see Photo 1 in DPR). Loss of the roadway would greatly impair access to the Machiasport peninsula south of the erosion site. Bank erosion at the site is primarily caused by tidal fluctuations.

II. PROJECT DESCRIPTION

A. Selected Plan

The proposed project would stabilize a 400 ft. reach of the Machias River in Machiasport, Maine (see Plates 2 and 3 in DPR). The existing embankment would be cleared of vegetation, grubbed, and replaced with rock revetment. The lower slope of the revetment would consist of 2.5 ft. thick stone protection underlain by 1 ft. thick layers of granular fill and gravel bedding graded at a 1:2 vertical to horizontal (v:h) slope (see Plate 4 in DPR). The upper slope consists of seeded topsoil underlain by compacted random fill graded at a ca. 1:3 slope. A stone stone drainage swale would accommodate surface runoff from an existing 18 inch pipe. Construction would take about 1 to 2 months to complete.

B. Alternative Plans and Protection Measures

1. No Action

If no action is taken, erosion will continue and eventually cause the Route 92 embankment to fail. Failure of Route 92 would adversely effect access to two commercial harbors (Bucksport and Starboard), about 300 private homes, an elementary school, a medium security state prison, two U.S. Post Offices, and a state park. The only viable detour would require vehicles to travel up to an additional 8 miles (see DPR). The detour consists partly of an unimproved gravel road which would need to be upgraded.

2. Relocation of Route 92

It would be possible to relocate Route 92 to the west of its present location. This alternative, however, would require removal of an existing home, and would not have local support. Relocation of the home and construction of a new stretch of road would also be prohibitively expensive.

3. Alternative Protection Measures

Construction of a timber crib wall or a precast modular retaining wall to protecting the Route 2 embankment were also considered. Both of there options were substantially more expensive than stone slope revetment, and were dropped from consideration (see DPR).

III. ENVIRONMENTAL RESOURCES

A. Physical Setting

The project area is located along the Machias River, within the town (and village) of Machiasport, about 30 miles northeast of Bar Harbor (see Location Map in DPR). The erosion site extends from near Machiasport Historical Society property (Gates House) southward for about 400 feet. The eroding embankment is about 15 to 25 feet high (mean = 20 ft), with slopes ranging from about 1:1: to 1:2 (v:h). The embankment is vegetated with trees (up to 6" DBH and 30 ft tall) and shrubs.

The Machias River is about 500 feet wide at the site, and has a tidal range of 12.6 feet. The base of the embankment is about 3 feet above mean high water (MHW). The intertidal zone adjacent to the site is about 150 feet wide and primarily unvegetated. Intertidal sediments within 30 feet of the embankment are mostly coarse sands, with some gravel, and cobble. Numerous large rocks have been placed along the base of the embankment by the state in an attempt to stem erosion. Further from shore, the intertidal zone grades into a mudflat

Extensive tidal mudflats are present in river north of the site, and in Machias Bay to the south. With the exception of the village of Machiasport and several other small towns, the shoreline along the lower Machias River and Machias Bay is largely undeveloped. Adjacent uplands are forested.

Northeastern coastal Maine has a northern temperate climate. Mean daily high temperatures in nearby Machias range from about 30°F in January to 70°F in July (Fefer et al., 1980). Mean annual precipitation is about 44 inches, with average monthly values ranging from about 3 inches in June, July and August, to about 6 inches in November. Winds are primarily from the northeast in winter and south in summer. Ice is usually present in the Machias River estuary during part of the winter.

B. Water Quality

The water quality of the Machias River in the project area is designated as class "SB" by the State of Maine. Maine water quality standards define "SB" waters as being suitable for recreation, fishing aquaculture, propagation and harvesting of shellfish, industrial uses, and as habitat for fish and other estuarine marine life. Standards for "SB" waters require that discharges not result in detrimental changes in the resident biological community.

C. Biological Resources

1. Fish

Coastal waters in northeastern Maine support a diverse finfish community (Shettig, et al., 1980). Common resident marine species likely to occur in the Machias River estuary include Atlantic herring, winter flounder, American plaice, Atlantic cod, haddock, Atlantic tomcod, American pollock, ocean pout, wrymouth, rock gunnel, redfish, sticklebacks, white perch, and Atlantic silversides. Many of these species move offshore as water temperature decline in the fall, and overwinter in deeper waters. Common summer migrants likely to occur in the estuary include spiny dogfish, hakes, blueback herring, Atlantic mackerel, menhaden, and striped bass. Anadromous species present in the Machias River include Atlantic salmon, American shad, rainbow smelt, and alewife. American eel, a catadromous species, is also present.

Species likely to spawn in the lower Machias River estuary include winter flounder and Atlantic silversides. Winter flounder spawn in sandy or silty subtidal areas during March through June. Silversides spawn in intertidal areas from May through August. Both species are likely to spawn near the project area.

Rainbow smelt enter the estuary and spawn in freshwater streams during April and May. Alewife spawn in freshwaters between April and June. Neither of these species is likely to spawn near the project area.

Large number of young salmon (smolts) are stocked in the upper basin each May, and immediately migrate to the ocean. Adult salmon return to the river primarily during May through July, and spawn in the upper river basin during October and November. Some adults may also enter the river during the early fall (mid September through mid October) just prior to spawning. Both smolts and adult salmon are likely to occur in the project area only as transients.

2. Shellfish and Other Invertebrates

Softshell clams are abundant in mudflats near the project area. None, however, are likely to be found within about 75 feet of the embankment (Dave Clifford, Maine Dept. Marine Resources, pers. commun.). Tidal flats in the area are presently closed to shellfishing because of bacterial contamination and lack of local depuration facilities.

Clam worms (Nereis virens), other polychaetes, and gammarid crustaceans are also likely to occur at the site.

3. Vegetation

Intertidal vegetation in the project area is sparse. One small (ca. 10 m x 3 m) strip of Spartina patens is present along the embankment. Scattered patches of S. patens, black rush, sea lavender, seaside goldenrod, seaside plantin, and northern sea blite also occur along the base of the embankment.

Species noted growing on the embankment include sugar maple, apple, alder, yellow birch, spruce, horse chestnut, raspberry, beach rose, sow thistle, New York aster, milkweed, ragweed, and grasses. Woody and herbaceous cover on the embankment is about 75 and 90 percent, respectively. About 25 large trees (> 4 inch diameter) are present.

4. Wildlife

Vegetation growing on the embankment provides habitat for small mammals and birds. The steep slope and close proximity to the highway, however, limit the site's habitat value. Birds most likely to occur include black capped chickadee, blue jay, American robin, catbird, Northern mockingbird, mourning dove, common grackle, and house sparrow. Small mammals likely to occur at the site include mice and voles. Others such as raccoon, cottontail, and grey squirrel may occasionally be present.

Intertidal mudflats near the embankment provide foraging habitat for shorebirds such as willets, yellowlegs, and spotted sandpiper. Waterfowl likely to occur in the river include black ducks, green wing teal, merganzers, old squaw, and eiders.

5. Threatened and Endangered Species

No federally listed threatened or endangered species are known to occur in the project area (see letters from Gordon Beckett, U.S. Fish and Wildlife Service, Richard Row, National Marine Fisheries Service). Atlantic salmon, a potential a candidate for listing under the Federal Endangered Species Act, occurs near the project area as a transient. Bald eagles, nest several miles upstream along the Machias River, and to the south in Machias Bay.

Coast-blite goosefoot (Chenopdium rubrum), an annual plant listed as threatened in Maine, was collected from near the project area in 1947 (see letter from Francie Smith, Maine Natural Heritage Program). The plant was reported from "near the sardine factory", situated about 500 feet upstream of the site. Although more detailed information is unavailable, C. rubrum occurs in saltmarshes or saline soils and was probably collected from along the Machias river. C. rubrum was not noted at the project area during an October, 1990 field visit.

D. Cultural Resources

Machiasport was first settled in 1765. The area was important for its lumber and saw mills during the 18th and 19th centuries. During Machiasport's heyday as a lumber town, ships loaded the timber at wharves lining the banks of the Machias River. Several structures from this period survive, notably the Gates House, which is now used as the Machiasport Historical Society.

The Gates House is in the vicinity of the proposed project area. The Gates House is listed on the National Register of Historic Places, and is considered significant architecturally, commercially and militarily. The house, built in c. 1807, was one of the earliest Federal style houses constructed in this area. It acquired commercial significance when purchased in 1813 by a trader, Nathan Gates. The house and its associated wharves, barn, store and railroad served as the center of the lumbering industry of the area, during the 19th century. The Gates House wharves served as the terminus for the Machiasport-Whitneyville Railroad, which was used to transport lumber to the piers for loading on coastal schooners. The first significant Naval battle of the Revolutionary War, in Maine, was waged within view of the Gates House.

E. Socio-Economic Resources

The town of Machiasport has a population of about 1166 (Machiasport Town Offices, pers. commun.). Existing development is concentrated in several small villages (Machiasport, Larrabee, Starboard, and Bucks Harbor). The town has two commercial harbors (Bucks Harbor and Starboard), and the local economy is heavily dependant on the the fishing industry. A second major source of employment is a medium security state prison. Access to the harbors and the prison would be severely impacted by failure of the Route 92 embankment in Machiasport. Failure of the road would also hinder access to an elementary school, Machias State Park, and two U.S. Post Offices.

IV. ENVIRONMENTAL CONSEQUENCES

A. Aquatic and Terrestrial Habitat

Construction of the proposed protection would alter about 14,000 square feet (0.32 acres) of coastal wetland habitat (as defined by Maine Wetland Protection Rules, 310.C.2). This estimate includes all habitat altered by the project below the base of the embankment (the wrack line). About 6,000 square feet of coastal habitat would be converted to upland. The other 8,000 square feet would remain coastal habitat, but be converted from sandy beach to rock revetment. The lost area is considered to have minimal functional value as habitat for aquatic life (see below).

Construction of the revetment would entail greater impacts to coastal habitat than either a timber-crib wall or precast modular retaining wall. Neither of these alternatives is practicable, however, since their cost:benefit ratios are much less than 1.0. If the local sponsor preferred either of these alternatives, no Federal participation in the project would be possible.

The project would have no significant impact on foreshore areas not directly impacted by the revetment footprint. Scour caused by redirection of wave energy would be minimal because the sloped revetment and rock toe would absorb and dissipate wave energy. The revetment, however, would preclude beach nourishment from the eroding embankment. Also, landward movement of intertidal flats with potential sea level rise would be prevented.

Upland habitat destroyed during by the revetment along the lower embankment would be replaced by new habitat (seeded topsoil) at the top of the revetment (see Plate 4 in DPR).

B. Water Quality

The proposed project would have no long-term impact on water quality in the Machias River. Construction activities would, however, temporarily increase suspended solid concentrations in the river near the project area. Because of the modest scope of this project, and the coarse nature of existing sediments and fill material, this impact would be highly localized. Standard procedures would be employed to minimize erosion and sedimentation.

C. Biological Resources

The proposed project would have no significant impact on fisheries resources in the Machias River. The small amount of sandy intertidal habitat which would be lost (see above) has minimal functional value for most estuarine fish. Species such as Atlantic silversides which forage in nearshore shallows would suffer a slight loss of habitat.

No fish are likely to spawn near the embankment. Winter flounder may spawn in subtidal mudflats adjacent to the site, but would not be impacted by project construction, provided that proper erosion and sedimentation controls are employed.

Project construction should not significantly disturb upstream migration of anadromous fish. As a precaution, however, no instream work will occur during peak runs of smelt, shad, alewife, and Atlantic salmon (mid April through July 15). Also, if practical, no instream work will occur between September 15 and October 15 to avoid disturbing the fall Atlantic salmon upstream migration. If must work occur between September 15 and October 15, NED should inform the Maine Department of Marine Resources (Lou Flagg, pers. commun.). Although the Fish and Wildlife Service suggested that no work occur during the Atlantic salmon spawning season (mid October through mid November), this precaution is unnecessary because spawning occurs in tributary streams well upstream of the project area.

The proposed project should have no significant impact on the softshell clam resources in the Machias River. Under present conditions, the footprint of the proposed revetment is well above the upper limit of significant clam populations. Softshell clams spawn in subtidal mudflats adjacent to the site, but would not be impacted by project construction, provided that proper erosion and sedimentation controls are employed.

The rock toe of the revetment may provide additional habitat for mussels, slipper shells, barnacles, and other marine invertebrates typical of rocky shore habitats.

The proposed revetment would destroy a small Spartina stand (ca. 300 square feet) and other vegetation growing near the embankment. No mitigation is proposed because of the small area lost, and because it is likely that continued erosion of the embankment would destroy the vegetation under without project conditions.

Construction of the revetment would result in the loss of existing terrestrial vegetation. Losses would be mitigated by planting the upper slope with a mix of native grasses and herbs. The slope would not be mowed, and shrubs and small tress would be allowed to become established. Larger trees which threaten the integrity of the protection would be removed.

The project would have no significant impact on wildlife resources in the Machiasport area. Although some habitat would be lost, the revegetated upper slope of the revetment would eventually provide equivalent replacement habitat.

The proposed work would have no significant impact on Federally threatened or endangered species (see December 17, 1990 letter from Gordon Beckett, U.S. Fish and Wildlife Service, and January 8, 1991 letter from Richard Row, National Marine Fisheries Service).

There is a slight risk that the project could impact Chenopodium rubrum, a plant listed as threatened in Maine. During the summer prior to construction, the project area will be resurveyed for the plant. If the plant is present, the Maine Natural heritage program will be contacted for assistance. Potential mitigation would consist of collecting seed and attempting to reestablish the population in suitable adjacent habitat. Either project construction or continued erosion of the embankment under the no action alternative would result in eventual loss of an existing population at the site.

D. Cultural Resources

The proposed project will have a visual effect on the Gates House. However, this effect will not be considered adverse for several reasons. The Gates House is not directly adjacent to the project area and the proposed revetment will probably not be visible from the house. The Miller Store, south of the Gates House is the closest structure to the proposed project area. This store may have been associated with the Gates House, but is not included in the National Register nomination.

The present setting for the Gates House is much different than when originally constructed. The house, by 1813, had adjoining wharves, barn and store. By the mid to late 19th century, its wharves served as the terminus for the Machiasport-Whitneyville Railroad, which was used to transport lumber to the piers for loading on coastal schooners. The shoreline has been dramatically altered by erosion and demolition of structures. The railroad, warehouses and wharves have all been removed.

The Corps and the Maine State Historic Preservation Officer have determined that the proposed project will have no adverse effect on the historic Gates House. The proposed project will change the present setting of the Gates House, however, the visual setting of the house's period of significance has already been substantially altered since the building's construction in c. 1807. Therefore, while there will be a visual effect, the effect should not be considered adverse. The Advisory Council on Historic Preservation in a letter dated 19 April 1991, has concurred with this determination.

E. Socio-Economic Resources

Construction of the proposed project would preclude failure of the Route 92 embankment and subsequent hardships to individuals and communities dependant on the road. The project is economically justified, and has a benefit to cost ratio of 1.4:1. Projected net annual benefits over a 25 year period are $ 7,052 per year.

Construction activities would have a minor adverse impact on local traffic. Proper traffic control measures will be employed to minimize the disruption. Noise generated by construction equipment may disturb local residents living or working near the site. To minimize this impact, no work will be allowed at night.

The projected construction cost of the project (132.5 K) would have an insignificant impact on the local economy.

V. ACTIONS TAKEN TO MINIMIZE ADVERSE ENVIRONMENTAL CONSEQUENCES

1. Construction impacts on water quality and aquatic life will be minimized by employing proper erosion and sedimentation control measures.

2. Construction equipment will avoid disturbing intertidal areas to the maximum practicable extent.

3. No instream work will occur during peak runs of smelt, shad, alewife, and Atlantic salmon (mid April through July 15). Also, if practical, no instream work will occur between September 15 and October 15 to avoid disturbing the fall Atlantic salmon upstream migraton. If any instream work occurs between September 15 and October 15, NED will notify the Maine Department of Marine Resources.

4. During the summer prior to construction, the project area will be resurveyed for Chenopodium rubrum, a plant listed as threatened in Maine. If a population is discovered the Maine Natural heritage program will be contacted for assistance. Potential mitigation would consist of collecting seed and attempting to reestablish the population in suitable adjacent habitat.

5. The upper slope of the revetment will be seeded with a suitable conservation mix.

VI. REFERENCES

Fefer, S.I. et. al. 1980. The Coastal Ecosystem. In: "An Ecological Characterization of Coastal Maine". U.S. Fish and Wildlife Service. FWS/OBS-80/29. (vol 1).

Shettig,P.A. et. al. 1980. Fishes In: "An Ecological Characterization of Coastal Maine". U.S. Fish and Wildlife Service. FWS/OBS-80/29. (vol 3).

VII. COORDINATION

A. Letters Sent

Gordon Beckett (U.S. Fish and Wildlife Service Region V)

December 12, 1990: requested comments pursuant to the Fish and Wildlife Coordination Act and Endangered Species Act

Douglas Thompson (U.S. Environmental Protection Agency, Region I)

December 12, 1990: requested general comments on the project

Douglas Beach (National Marine Fisheries Service)

December 12, 1990: requested comments pursuant to the Endangered Species Act

Thomas Bigford (National Marine Fisheries Service)

December 12, 1990: requested comments pursuant to the Fish and Wildlife Coordination Act

Robert Blakesly (Maine State Planning Office)

December 12, 1990: requests comments from Maine resource agencies

Donald Klima (Advisory Council on Historic Preservation)

March 14, 1991: requested concurrence with finding that the proposed project will have no adverse effect on the Gates House

April 12, 1991: provided additional information about rational behind determination that the proposed project would have no significant impact on Gates House

Earle Shettleworth (Maine Historic Preservation Commission)

December 18, 1990: requested comments pursuant Section 106 of the National Historic Preservation Act

B. Letters Received (see also the Appendix)

Gordon Beckett (U.S. Fish and Wildlife Service Region V)

December 17, 1990: indicated that no threatened or endangered species are known to exist in the project area, suggested that construction activities should avoid the Atlantic salmon spawning season (15 October through 15 November)

Don Klima (Advisory Council on Historic Preservation)

March 28, 1991: requested more information about Gates house, and potential project impacts on the property

April 19, 1991: concurred with determination that the project would have no significant impact on Gates house, a property listed on the National Register of Historic Properties

Chris Mantzaris (National Marine Fisheries Service)

April 9, 1991: suggested seasonal restrictions to minimize potential impacts to spawning fisheries

Richard Roe (National Marine Fisheries Service)

January 18, 1991: indicated that no threatened or endangered species under NMFS jurisdiction are known to occur in the project area

Earle Shettleworth (Maine State Historic Preservation Commission)

January 15, 1991: requested additional information about the project

February 26, 1991: determined that the project would have no significant impact on Gates House

Francie Smith (Maine Natural Heritage Program)

April 16, 1991: indicated that coast-blite goosefoot, a threatened plant in Maine, may occur in the project area

Douglas A. Thompson (U.S. Environmental Protection Agency, Region 1)

January 15, 1991: indicated that mitigation for destruction of the small Spartina stand growing along the revetment might be required

B. Personal Communications

Lou Flagg (Maine Dept. of Marine Resources)

April 29, 1991: explained rational for seasonal restrictions discussed in NMFS letter dated April 9, 1991. Indicated that a fall window (Sept. 15 to Oct. 15) to protect upstream migrating Atlantic salmon was desirable, but not mandatory.

Jay McGovan (Maine Dept. of Marine Resources)

April 2, 1991: indicated that mitigation for loss of intertidal habitat caused by the project would not be required by his office

Jay McGowan and Clark Clifford

October 10, 1990: coordinated site visit with the NED project team

Francie Smith (Maine Natural Heritage Program)

April 11, 1991: an old record (1940's) indicates that coast-blite goosefoot may occur near the project area. Suggested that site should be resurveyed in summer when plant is in flower.

VIII. COMPLIANCE WITH FEDERAL ENVIRONMENTAL STATUTES, EXECUTIVE MEMORANDUM, AND EXECUTIVE ORDERS

Federal Statutes

1. Preservation of Historic and Archaeological Data Act of 1974, as amended, 16 U.S.C. 469 et seq.

Compliance: Consultation with the State Historic Preservation Office and the Advisory Council on Historic Preservation concerning mitigation of historic and/or archaeological resources signifies compliance.

2. Clean Air Act, as amended, 42 U.S.C. 7401 et seq.

Compliance: Public notice of the availability of this report to the Environmental Protection Agency signifies compliance pursuant to Sections 176c and 309 of the Clean Air Act

3. Clean Water Act of 1977 (Federal Water Pollution Control Act Amendments of 1972) 33 U.S.C. 1251 et seq.

Compliance: A Section 404(b)(1) Evaluation and Compliance Review have been incorporated into this report. An application shall be filed for State Water Quality Certification pursuant to Section 401 of the Clean Water Act.

4. Coastal Zone Management Act of 1972, as amended, 16 U.S.C. 1431 et seq.

Compliance: A CZM consistency determination shall be provided to the State for review and concurrence that the proposed project is consistent with the approved State CZM program.

5. Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 et seq.

Compliance: Coordination with the U.S. Fish and Wildlife Service (see letter dated December 17, 1990) and the National Marine Fisheries Service (see letter dated January 18, 1991) has yielded no formal consultation requirements pursuant to Section 7 of the Endangered Species Act.

6. Estuarine Areas Act, 16 U.S.C. 1221 et seq.

Compliance: Not applicable.

7. Federal Water Project Recreation Act, as amended, 16 U.S.C. 4601-12 et seq.

Compliance: Public notice of the Availability of this report to the National Park Service (NPS) and the Office of Statewide Planning relative to the Federal and State comprehensive outdoor recreation plans signifies compliance with this Act.

8. Fish and Wildlife Coordination Act, as amended, 16 U.S.C. 661 et seq.

Compliance: Coordination with the U.S. FWS, NMFS, and state resource agencies signifies compliance with the Fish and Wildlife Coordination Act.

9. Land and Water Conservation Fund Act of 1965, as amended, 16 U.S.C. 4601-4 et seq.

Compliance: Public notice of the availability of this report to the National Park Service (NPS) and the Office of Statewide Planning relative to the Federal and State comprehensive outdoor recreation plans signifies compliance with this Act.

10. Marine Protection, Research, and Sanctuaries Act of 1972, as amended, 33 U.S.C. 1401 et seq.

Compliance: Not Applicable.

11. National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470 et seq.

Compliance: Coordination with the State Historic Preservation Office and Advisory Council on Historic Preservation determined that no historic or archaeological resources would be affected by the proposed project (see February 26, 1991 letter from Earle Shettleworth and March 28 and April 19 letters from Donald Klima).

12. National Environmental Policy Act of 1969, as amended, 42 U.S.C. 4321 et seq.

Compliance: Preparation of this report signifies partial compliance with NEPA. Full compliance shall be noted at the time the Finding of No Significant Impact is issued.

13. Rivers and Harbors Act of 1899, as amended, 33 U.S.C. 401 et seq.

Compliance: No requirements for Corps' projects or programs authorized by Congress. The proposed shoreline stabilization project is pursuant to the Congressionally-approved continuing authority program: Section 14 of the 1946 Flood Control Act.

14. Watershed Protection and Flood Prevention Act, as amended, 16 U.S.C. 1001 et seq.

Compliance: Not applicable.

15. Wild and Scenic Rivers Act, as amended, 16 U.S.C. 1271 et seq.

Compliance: Not Applicable.

Executive Orders

1. Executive Order 11988, Floodplain Management, 24 May 1977 amended by Executive Order 12148, 20 July 1979.

Compliance: Not Applicable.

2. Executive Order 11990, Protection of Wetlands, 24 May 1977.

Compliance: Circulation of this report for public review fulfills the requirements of Executive Order 11990, Section 2(b).

3. Executive Order 12114, Environmental Effects Abroad of Major Federal Actions, 4 January 1979.

Compliance: Not Applicable.

Executive Memorandum

1. Analysis of Impacts on Prime or Unique Agricultural Lands in Implementing NEPA, 11 August 1980.

Compliance: Not Applicable.

APPENDIX

LETTERS RECEIVED

MAINE HISTORIC PRESERVATION COMMISSION
55 Capitol Street
State House Station 65
Augusta, Maine 04333

Earle G. Shettleworth, Jr.
Director

Telephone
207-289-213

January 15, 1991

Mr. Joseph Ignazio, Director of Planning
U. S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, Massachusetts 02254-9149

Dear Mr. Ignazio:

The Commission is in receipt of your letter regarding the proposed shoreline erosion protection project along the Machias River in Machiasport, Maine.

Based on your brief description of this project, I agree that there may be a visual effect on the Gates House. However, there is insufficient information for me to assess the nature of that effect. Therefore, I ask that you submit additional material that will show 1) the actual physical area affected, noting in particular the height of the revetment and any trees or shrubbery to be removed between it and the Gates House; and 2) a photograph of a completed project comparable to this one which shows the visual alteration in the embankment which such a procedure entails.

Thank you for your cooperation in this matter.

Sincerely,

Earle G. Shettleworth, Jr.
State Historic Preservation Officer

EGS/tls

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
J.F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203-2211

January 15, 1991

Mr. Joseph L. Ignazio, Chief
Planning Division
U.S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, MA 02254-9149

Dear Mr. Ignazio:

This responds to your letter of December 12, 1989, requesting comments regarding a Section 14 emergency streambank protection project along the Machais River in Machaisport, Maine.

The proposed project consists of the direct placement of approximately 200 linear feet of the stone revetment along the shoreline to protect a section of highway (Route 92) threatened by bank erosion. The project would alter approximately 4,000 square feet of intertidal/ riverine habitat.

Review of the preliminary report of the proposed project indicates that we do not anticipate long term significant adverse damage to the riverine environment provided that the project's construction takes place in the early spring or early fall. However there is a 30 foot by 3 foot strip of salt marsh (Spartina patens) which could require mitigation, if construction of the revement w[illegible]d displace it. In the event that mitigation is required, please [illegible]old the permit in abeyance until a detailed mitigation plan is submitted. Upon receipt of the plan, our agency will make an immediate final response.

Thank you for the opportunity to comment on this project. If there is any further need to contact this office, please contact Mr. Melvin P. Holmes of my staff at (617) 565-4433.

Sincerely,

for Douglas A. Thompson, Chief
Wetland Protection Section

cc: NMFS, Gloucester, MA
USF&WS, Concord, NH
Ronald G. Manfredonia, Chief WQB

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northeast Region
One Blackburn Drive
Gloucester, MA 01930

JAN 18 1991

Mr. Joseph L. Ignazio, Chief
Planning Division, NED
Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254-9149

Dear Mr. Ignazio:

This is in response to your letter of December 12, 1990, regarding the presence of endangered or threatened species in the vicinity of the Machias River in Machiasport, Maine. We have reviewed the emergency streambank protection project location and have determined that there are no endangered or threatened species under our jurisdiction in the vicinity.

There is no need for further consultation pursuant to Section 7 of the Endangered Species Act of 1973, as amended, at this time. Should project plans change or new information become available that changes the basis for this determination, then consultation should be reinitiated.

Sincerely,

Richard B. Roe
Regional Director

MAINE HISTORIC PRESERVATION COMMISSION
55 Capitol Street
State House Station 65
Augusta, Maine 04333

Earle G. Shettleworth, Jr.
Director

Telephone:
207-289-2133

February 26, 1991

Mr. Joseph Ignazio, Director of Planning
U. S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, Massachusetts 02254-9149

Dear Mr. Ignazio:

Thank you for submitting additional information concerning the proposed shoreline protection project along the Machias River in Machiasport, Maine.

Documentary photographs of the project area reveal that this shoreline formerly lay behind a series of wharves, warehouses, and a canning factory. Yet it is unlikely that any significant archaeological remains exist here. On the other hand, as you have concluded, there will be a considerable visual alteration to the setting of the Gates House as it exists today. There will, however, be no physical impact on the building or its immediate site.

Therefore, in consideration, of the above described circumstances and in accordance with Section 106 of the National Historic Preservation Act, I find that this undertaking will have no adverse effect on the Gates House, which is listed on the National Register of Historic Places.

If I may be of further assistance in this matter, please do not hesitate to contact me.

Sincerely,

Earle G. Shettleworth, Jr.
State Historic Preservation Officer

EGS/tls

Advisory
Council On
Historic
Preservation

The Old Post Office Building
1100 Pennsylvania Avenue, NW, #809
Washington, DC 20004

MAR 28 1991

Mr. Joseph L. Ignazio
Director of Planning
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254-9149

RE: Streambank/Shoreline Erosion Protection Project
Machiasport, Maine

Dear Mr. Ignazio:

On March 20, 1991, the Council received your determination that the referenced project would not adversely affect the Gates House, a property listed on the National Register of Historic Places.

We have reviewed your supporting documentation and note that it does not contain a description of the property or an adequate statement as to how and why the Criteria of Adverse Effect were found inapplicable. Without this information we are unable to evaluate your determination that despite the alteration to the property's setting, the introduction of the revetment will not adversely affect this property. In fact, your transmittal letter states that both the Corps and the Maine SHPO have determined that there will be a visual intrusion. Thus, we are somewhat puzzled by the determination of effect.

Pursuant to 36 CFR Part 800.9 of the Council's regulations, "Protection of Historic Properties", an undertaking is considered to have an adverse effect when there is an alteration of the character of a property's setting when that setting contributes to the property's qualification for the National Register or when there is an introduction of a visual element that is out of character with the property or if this element alters the property's setting.

Accordingly, we request that you submit a description of the Gates House and a discussion regarding how and why the Criteria of Adverse Effect do not apply. We will be able to resume our review upon receipt of this information.

We look forward to hearing from you soon. If you have any questions, please call Valerie DeCarlo at FTS 786-0505.

Sincerely,

Charlene Irvin Vaughn

for Don L. Klima
Director, Eastern Office
of Project Review

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northeast Region
Habitat and Protected Resources
Division
One Blackburn Drive
Gloucester, MA 01930-2298

April 9, 1991

Mr. Joseph L. Ignazio
New England Division
Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254-9149

Dear Mr. Ignazio:

This is in response to your letter of December 12, 1990 requesting comments on the proposed emergency streambank protection project along the Machias River in Machiasport, Maine.

The Machias River is host to many anadromous species of fish including American salmon, American shad, alewife, rainbow smelt, and American eel. The Maine Department of Marine Resources requests that in-water work in the river be done either between July 15 and September 15 or in the late fall beginning after the 15th of October.

We recommend that the proposed work abide by the stated time of year restrictions in order to minimize potential impacts to spawning fisheries. Please contact Nancy Haley at 508/281-9388 if you have any questions.

Sincerely,

Chris Mantzaris
Habitat Program Coordinator

John R. McKernan, Jr.
Governor

Lynn Wachtel
Commissioner

Kathryn J. Rand
Deputy Commissioner

Department
of
ECONOMIC AND COMMUNITY DEVELOPMENT
OFFICE OF COMPREHENSIVE PLANNING

16 April 1991

Michael Penko
Department of the Army
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, MA 02254-9149

Re: Natural Heritage Program Review of Machias River Project and Milbridge Project

Dear Mike,

This letter is a follow up to our phone conversation of 11 April 1991, regarding the review of two Army Corps projects. I have checked our database for records of rare, endangered or other significant plants, animals, natural communities or geological features at or near the projects mentioned above.

We are not currently aware of any records for rare features on the Narraguagus River in Milbridge. The Program is also not aware of any surveys or inventory work to check for rare species and features at or near that project site.

There is one historical record known from the Machias River project area. Chenopodium rubrum, coast-blite goosefoot, was documented in Machiasport in 1947. This plant is state listed as Threatened in Maine. The herbarium label states that the specimen was taken from "...near the sardine factory in Machiasport". The species favors salt marshes and saline soils, and flowers in late summer. Once again, the Program is not aware of any recent field work in that area to search for rare species and features.

I hope this information is useful, please call if I can be of further assistance.

Sincerely,

Francie Smith

Francie Smith
Maine Natural Heritage Program

State House Station 130, Augusta, Maine 04333 — *Offices Located at* 219 Capitol Street
Telephone (207) 289-6800

Advisory
Council On
Historic
Preservation

The Old Post Office Building
1100 Pennsylvania Avenue, NW, #809
Washington, DC 20004

APR 19 1991

Mr. Joseph L. Ignazio
Director of Planning
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts -2254-9149

REF: Streambank/Shoreline Erosion Control Project
Machiasport, Maine

Dear Mr. Ignazio:

On April 15, 1991, the Council received the additional information we requested to accompany your determination that the referenced project would not adversely affect the Gates House, a property listed on the National Register of Historic Places. We have reviewed your supporting documentation and we agree with your determination.

This letter confirms that the requirements of the National Historic Preservation Act and the Council's regulations have been met for this project. Both this letter and your supporting documentation should be retained in your environmental or project files.

If you have any questions, please contact Valerie DeCarlo at (202) 786-0505. Thank you for your cooperation.

Sincerely,

Don L. Klima
Director, Eastern Office
of Project Review

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

After careful consideration of the information in this Environmental Assessment, it is my conclusion that the proposed shoreline erosion control project in Machiasport, Maine is in the public interest, and would have no significant impact on the environment.

In my evaluation, this Environmental Assessment has been prepared in accordance with the National Environmental Policy Act of 1969. The determination that an Environmental Impact Statement is not required is based on the information contained in the Environmental Assessment, including the following considerations.

1. The proposed plan would have no significant impact on any Federally listed rare, threatened or endangered species.

2. The proposed project would have no adverse affect upon any structure or site of historic, architectural or archaeological significance.

3. With the exception of localized, short-term increases in turbidity, the project would have no impact on the water quality of the Machias River.

4. The project would have no significant impact on the natural resources of Machias River estuary. Losses of intertidal habitat have been minimized to the maximum practicable extent.

5. Several measures would be implemented to minimize potential adverse environmental consequences (see Section V of the Environmental Assessment).

In my evaluation, the Environmental Assessment has been prepared in accordance with the National Environmental Policy Act of 1969. Based on my review of the environmental effects as presented in the Environmental Assessment, I have determined that this project is not a major federal action significantly affecting the quality of the human environment. It is therefore exempt from requirements to prepare an Environmental Impact Statement.

19 Jun 91
Date

Philip R. Harris,
Colonel, Corps of Engineers
Division Engineer

NEW ENGLAND DIVISION
U.S. ARMY CORPS OF ENGINEERS, WALTHAM, MA
SECTION 404(b)(1) EVALUATION

PROJECT: Machiasport Streambank Protection Project, Machiasport, Maine

PROJECT MANAGER: Mr. Robert Russo EXT. 617-647-7381

FORM COMPLETED BY: Michael Penko EXT. 617-647-8139

PROJECT DESCRIPTION:

The proposed project would stabilize a 400 ft. reach of the Machias River in Machiasport, Maine (see Plates 2 and 3 in DPR). The existing embankment would be cleared of vegetation, grubbed, and replaced with rock revetment. The lower slope of the revetment would consist of 2.5 ft. thick stone protection underlain by 1 ft. thick layers of granular fill and gravel bedding graded at a 1:2 vertical to horizontal (v:h) slope. The upper slope consists of seeded topsoil underlain by compacted random fill graded at a ca. 1:3 slope. The revetment would be about 400 ft. in length and 15 ft. high. A stone stone drainage swale would accommodate surface runoff from an existing 18 inch pipe. Construction would take about 1 to 2 months to complete.

NEW ENGLAND DIVISION
U.S. ARMY CORPS OF ENGINEERS, WALTHAM, MA

PROJECT: Machiasport Streambank Protection Project, Machiasport, Maine

Evaluation of Section 404(b)(1) Guidelines

1. Review of Compliance (Section 230.10(a)-(d)).

a. The discharge represents the least environmentally damaging practicable alternative and if in a special aquatic site, the activity associated with the discharge must have direct access or proximity to, or be located in the aquatic ecosystem to fulfill its basic purpose;

|X| YES | | NO

b. The activity does not appear to: 1) violate applicable state water quality standards or effluent standards prohibited under Section 307 of the CWA; 2) jeopardize the existence of Federally listed threatened and endangered species or their critical habitat; and 3) violate requirements of any Federally designated marine sanctuary check responses from resource and water quality certifying agencies);

|X| YES | | NO

c. The activity will not cause or contribute to significant degradation of waters of the U.S. including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values;

|X| YES | | NO

d. Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem

|X| YES | | NO

2. Technical Evaluation Factors (Subparts C-F).

	N/A	Not Signif-icant	Signif-icant
a. Potential Impacts on Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C).			
1) Substrate.		X	
2) Suspended particulates/turbidity.		X	
3) Water.		X	
4) Current patterns and water circulation.			
5) Normal water fluctuations.		X	
6) Salinity gradients.	X		
b. Potential Impacts on Biological Characteristics of the Aquatic Ecosystem (Subpart D).			
1) Threatened and endangered species.	X		
2) Fish, crustaceans, mollusks and other aquatic organisms in the food web.		X	
3) Other wildlife.		X	
c. Potential Impacts on Special Aquatic Sites (Subpart E).			
1) Sanctuaries and refuges.	X		
2) Wetlands.		X	
3) Mud flats.		X	
4) Vegetated shallows.	X		
5) Coral reefs.	X		
6) Riffle and pool complexes.	X		
d. Potential Effects on Human Use Characteristics (Subpart F).			
1) Municipal and private water supplies.	X		
2) Recreational and Commercial fisheries.		X	
3) Water-related recreation.		X	
4) Aesthetics.		X	
5) Parks, national and historic monuments, national seashores, wilderness areas, research sites, and similar preserves.	X		

3. Evaluation and Testing (Subpart G).

a. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material. (Check only those appropriate.)

1)	Physical characteristics	[X]
2)	Hydrography in relation to known or anticipated sources of contaminants	[ ]
3)	Results from previous testing of the material or similar material in the vicinity of the project	[ ]
4)	Known, significant sources of persistent pesticides from land runoff or percolation	[ ]
5)	Spill records for petroleum products or designated hazardous substances (Section 311 of CWA)	[ ]
6)	Public records of significant introduction of contaminants from industries, municipalities, or other sources	[ ]
7)	Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities	[ ]
8)	Other sources (specify)	[X]

List appropriate references.

Environmental Assessment completed for this project.

b. An evaluation of the appropriate information in 3a above indicates that there is reason to believe the proposed dredge or fill material is not a carrier of contaminants, or that levels of contaminants are substantively similar at extraction and disposal sites and not likely to require constraints. The material meets the testing exclusion criteria.

[X] YES [ ] NO

4. Disposal Site Delineation (Section 230.11(f)).

a. The following factors, as appropriate, have been considered in evaluating the disposal site.

1)	Depth of water at disposal site	[X]
2)	Current velocity, direction, and variability at disposal site	[ ]
3)	Degree of turbulence	[ ]
4)	Water column stratification	[ ]
5)	Discharge vessel speed and direction	[ ]
6)	Rate of discharge	[ ]
7)	Dredged material characteristics (constituents, amount, and type of material, settling velocities)	[ ]
8)	Number of discharges per unit of time	[ ]
9)	Other factors affecting rates and patterns of mixing (specify)	[ ]

List appropriate references. See Environmental Assessment

b. An evaluation of the appropriate factors in 4a above indicates that the disposal site and/or size of mixing zone are acceptable..... [X] YES [ ] NO

5. Actions To Minimize Adverse Effects (Subpart H).

All appropriate and practicable steps have been taken, through application of recommendation of Section 230.70-230.77 to ensure minimal adverse effects of the proposed discharge..... [X] YES [ ] NO

List actions taken.

See Environmental Assessment prepared for this project.

6. Factual Determination (Section 230.11).

A review of appropriate information as identified in items 2 - 5 above indicates that there is minimal potential for short or long term environmental effects of the proposed discharge as related to:

a. Physical substrate (review sections 2a, 3, 4, and 5 above). YES [X] NO [ ]

b. Water circulation, fluctuation and salinity (review sections 2a, 3, 4, and 5). YES [X] NO [ ]

c. Suspended particulates/turbidity (review sections 2a, 3, 4, and 5). YES [X] NO [ ]

d. Contaminant availability (review sections 2a, 3, and 4). YES [X] NO [ ]

e. Aquatic ecosystem structure, function and organisms(review sections 2b and c, 3, and 5) YES [X] NO [ ]

f. Proposed disposal site (review sections 2, 4, and 5). YES [X] NO [ ]

g. Cumulative effects on the aquatic ecosystem. YES [X] NO [ ]

h. Secondary effects on the aquatic ecosystem. YES [X] NO [ ]

7. Findings of Compliance or non-compliance.

a. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines.....[X]

19 Jan 91
DATE

Philip R. Harris
Colonel, Corps of Engineers
Division Engineer

ENCLOSURE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
TRANSPORTATION BUILDING
STATE HOUSE STATION 16 AUGUSTA, MAINE 04333-0016

DANA F. CONNORS
Commissioner

June 6, 1991

Joseph L. Ignazio
Acting Division Engineer
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, MA 02254-9149

Dear Mr. Ignazio:

This is in response to your May 7, 1991 letter regarding proposed slope protection on State Route 92, along the Machias River in Machiasport, Maine.

We are prepared to cooperate fully with the Corps of Engineers on this project. I understand that this work was requested by local, municipal officials and that the construction phase will not begin until at least next Spring. The Chief Engineer, Richard A. Coleman, and his staff are now reviewing the project documents and draft agreement you sent. Specific comments, if any, will be addressed to you directly by Mr. Coleman, or his designee. I do not see the cost sharing requirements you detailed as being a problem in this case.

Thank you for your early communication. We look forward to working with you on this project.

Sincerely,

Dana F. Connors
Commissioner

RMP:RAC:bb
cc: William H. Treworgy, Milbridge Town Mgr.
Robert Blakesly, State Planning Office
Richard A. Coleman, Dept. of Transportation